Φοίνιξ—	Blood (arterial).
	Coat of a horse.
	The dragon or serpent.
	The rainbow.
	The jackal.
	The lion.
	Cloaks or mantles.
	Red prows of ships.
	The palm tree.
Ῥοδόεις—	The rose.
	Olive oil.
Κυάνεος—	Bronze.
	Dark eyebrows and hair.
	A dark cloud.
	The dark coat of a horse.
	Masses of armed men.
	Black mourning garments.
	Sea sand.
	The sea beating on rocks.
	Red prows of ships.
	The dragon or serpent.
Χλωρός—	A pale face.
	Fresh pulled twigs.
	Honey.
	Olive wood bark.
	The nightingale.
Οἶνοψ—	Red wine.
	Oxen.
	[The sea in circumstances of darkness.]

GROUP II.—*Objects conveying to the Colour-blind the Sensation of Blue, or Blue Darkened.*

Πορφύρεος—	Various articles of clothing and furniture.
	The rainbow.
	Blood (venous).
	A dark cloud.
	Waves and the darkening sea.
	Death.
Ἰοειδής—	The violet.
	The sea.
	Iron.
	Dark dyed wool.
	[Dark living sheep].

EXTRA GROUP.—*Objects conveying to the Colour-blind a Neutral Sensation.*

Πολιός—	Human hair in old age.
	Iron.
	The hide of a wolf.
	The sea.

I think the following propositions may be now taken as made out on the evidence supplied by Mr. Gladstone :—

1. That Homer's applications of colour epithets are in many cases inconsistent with the normal ideas in regard to them. This is the first and most general symptom of colour-blindness.

2. That this inconsistency is particularly noticeable in the use of the expressions for red and green. This is a further and more definite symptom, showing the peculiarly defective sensations in regard to these particular colours.

3. But that when the objects referred to are classified in two groups, according to the two colour sensations they respectively offer to the colour-blind eye, the use of the colour-epithets becomes consistent, no epithet belonging to one group being used (except in one doubtful case) for an object belonging to the other. This is a still more definite symptom, pointing, as it seems to me, to the *dichromic* nature of the malady.

It is not my province to carry the matter further ; but if the explanation offered be correct, it may involve some very interesting considerations.

One may ask whether the defect in vision which gave rise to these singular uses of the colour epithets was likely to have been general among the people of the time? Do the expressions convey what would have been the general sense of the Greeks of the Homeric age ? If so, we may fully concur in Mr. Gladstone's hypothesis, that the organ of colour was but partially developed among them, while at the same time we learn exactly what was the nature of their deficiency. It would be a most interesting fact in physiology and optics if we could show, in this way, that dichromatism was an early stage of human vision, out of which the present more comprehensive and perfect faculty has been gradually developed in the course of some thousands of years.

But on the other hand, it is quite possible that this defect was not general, that it existed only in the person or the writer whose language exhibits it. If this view is correct it may have a most important bearing on a dispute that has long agitated the scholarly world, namely, as to the authorship of the Homeric Poems.

If we can trace, running through the whole of these immortal works, the distinct and consistent evidence of a well-marked personal peculiarity in the writer—a positive characteristic by which his individual identity may be, in all parts, clearly inferred—we have the strongest possible proof, by internal evidence, of the existence of a single author, to whom the whole of the poems are due.

WILLIAM POLE

NOTES

AMONG the well-deserved decorations awarded in connection with the Paris Exhibition is that of Grand Officer of the Legion of Honour to the eminent chemist M. Pasteur.

AT the annual meeting of the Mathematical Society, November 14, Lord Rayleigh, F.R.S., instead of giving an address, will read a paper on the Instability of Jets.

IN connection with the operations of the United States Fish Commission during the past summer, *Harper's Weekly* furnishes some particulars of what may be considered as one of the most important discoveries of recent date in regard to the geology of North America. During the operations of the Commission a formation was met with which belongs probably to the miocene or later tertiary, as shown by the occurrence of numerous fragments of eroded, hard, compact, calcareous sandstone and sandy limestone. These are usually perforated by the burrows of *Saxicava rugosa*, and contain in more or less abundance fossil shells and fragments of lignite, radiates, &c. These fragments have generally been hauled up by trawl lines from depths of from 50 to 250 fathoms, and have already furnished a large number of species, some of them northern forms still living on the New England coast, others for the most part extinct. A conspicuous fossil of an undescribed species belongs to the genus *Isocardia*. Other genera are *Mya*, *Ensatella*, *Cyprina*, *Natica*, *Cardium*, *Cyclocardia*, *Fusus*, *Latirus*, *Turritella*, &c. The specimens so far obtained range from George's Bank to Banquereau, a region of at least several hundred miles in length, and extending along the outer banks from off Newfoundland nearly to Cape Cod. Indeed, it is suggested by Prof. Verrill that the formation constitutes in large part the plateaus known as fishing banks, frequented by such large numbers of cod, halibut, &c. The credit of bringing these specimens to light is due chiefly to Mr. Warren Upham, who originally visited Gloucester for the purpose of investigating certain glacial drift and fossiliferous deposits, and who obtained many of the specimens from fishermen who had brought them in and kept them as curiosities.

IN the summer of 1877 an expedition in the interest of the Princeton (U.S.) College Museum of Geology and Archæology was fitted out for the purpose of making explorations in

the tertiary beds around Fort Bridger and in Central Colorado, especially with a view of securing specimens of some of the interesting fossil vertebrates of which Prof. Cope and Prof. Marsh have described so many species. Six persons connected with Princeton College either as professors or students constituted the party, and the results of their labours were rich and varied beyond their expectation. The objects obtained since the return of the expedition have been subjected to a critical investigation by experts, and No. 1 of the report has just made its appearance in the form of a pamphlet of about 150 pages, with numerous illustrations. As might have been expected, the greater part of the collection consisted of species already collected and for the most part described. But in addition to these a considerable number of novelties rewarded the zeal of the explorers. These are described and many of them figured in the pamphlet referred to. Not the least valuable part of the report, *Harper's Weekly* states, consists of a systematic catalogue of the eocene vertebrates of Wyoming, as compiled from all accessible sources. Of the genera mentioned there are 70 belonging to the mammals, 3 to the birds, 27 to the reptiles and amphibians, and 17 to the fishes. Of species there are 114 of mammals, 7 of birds, 79 of reptiles and amphibians, and 51 of fishes, making a total of 251 species—certainly a very satisfactory showing for a portion of the extinct vertebrate fauna of the west.

As has been reported in the papers, M. Giffard's captive balloon has been sold to Mr. Gooch, of the Princess's Theatre, to be exhibited in London. The sale does not include the winding-up apparatus and machinery, which will remain in the Tuileries grounds, and be utilised for a second captive balloon, which will be built by M. Giffard, during the winter, for next season. The new captive balloon is to be enlarged and improved in details, so that its working capacities may be increased. The increased interest in ballooning has been manifested by the acceptance by the public authorities of the services of the École des Aéronautes Français for executing scientific ascents at Versailles on the day of the great *fête*, and at Paris on the occasion of the inauguration of the Mansion-house of the 19th arrondissement. This École des Aéronautes was established three years ago by a number of persons who escaped from Paris in a balloon during the siege, for the purpose of promoting practice in aeronautics.

Nothing has occurred at the meeting of the Social Science Congress calling for special notice on our part. Lord Norton, the president, on the basis of doubtful statistics, seemed to think that the teaching of a "jumble of botany, physiology, &c.," in our elementary schools, is the cause of a supposed imperfection in the teaching of other branches in these schools. Certainly, if these subjects are jumbled they will do more harm than good, but as Lord Norton thinks our existing old universities are pretty near perfection, and are sufficient for the wants of the country, it may be doubted whether he has anything like an adequate knowledge of our educational needs. The Hon. G. C. Broderick seems to be pretty much of Lord Norton's opinion with regard to our universities, and virtually admitted that their highest purpose was to be "finishing schools for young gentlemen." On the question of increasing the number of our universities, there were various shades of opinion; all whose opinions are of any weight, however, agreed that increase is necessary, differing only as to the particular form which it should take.

The following statement with regard to Mr. Edison's recent invention appears in the *Times*:—It appears, from the New York papers, that a company has been started in New York called "The Edison Electric Light Company," with a capital of 300,000 dollars. The object of the company is stated generally to be "the production of heat, light, and power by electricity." The present object, however, is to supply a fund which is to assist Mr. Edison in carrying forward his experiments to a point where he shall give a positive demonstration of the powers of his new inventions. Precisely what these inventions are in all their details of transmission of force and the multiplication of the light derived from electricity, Mr. Edison has not yet told to anybody, fearing that the devices may be patented abroad. The invention, as to the use of electric lights, it is said, will not include the use of carbon points, as ordinarily known in electric lights, but instead the incandescence of a metal simpler and cheaper in every way. Mr. Edison has determined upon the general features of his light, its manner of production, &c.; but in many minor points connected with the distribution of the light for ordinary domestic and business purposes much work has yet to be done. It was at first supposed that 100,000 dollars would be a sufficient experimental fund, but the larger amount was finally determined upon.

The following is the title of the essay to which the Howard medal of the Statistical Society will be awarded in November, 1879; the essays to be sent in on or before June 30, 1879:—"On the Improvements that have taken place in the Education of Children and Young Persons during the Eighteenth and Nineteenth Centuries." The council have decided to grant the sum of 20*l.* to the writer who may gain the "Howard Medal" in November, 1879.

In his just published report on the trade, &c., of Kiel, her Majesty's Vice-Consul states that the existence of a large bed of pure salt in the neighbourhood of Segeburg, about thirty-five miles distant, is certain. The bed lies about 144 metres from the surface. Two shafts were sunk, one of which reached 116 metres and the other 85 metres, when underground water filled both up to within 28 metres of the surface. Powerful pumps have been erected, which have emptied the water down to 40 metres, and, although constant pumping shows only a slight decrease, the chief engineer has no doubt of eventual success. In five days the largest pump brought up about 50,000 cubic metres of water, representing a weight of 50,000,000 kilos. The water contains from sixteen to twenty per cent. of salt. The report further states that, in the neighbourhood of Elmshorn, the German authorities are boring for coal. They have reached about 4,000 feet from the surface, but at present have found only red clay, intermixed with particles of salt.

According to a Japan contemporary, an attempt, on a more extended scale than that of last year, has been made this season to introduce Japanese black teas into the European market. The samples sent in 1877 were favourably reported on, and it was hoped that an outlet had been found for the continually-increasing quantity of tea produced. These hopes, however, appear to be fading, and even if the existing prejudice against the article can be overcome, our contemporary finds it difficult to see how, with a yearly-increasing export from China and India, leaving Ceylon entirely out of the question, it can ever be made a paying speculation. Much is still hoped from the United States, but the verdict of the American trade upon it has yet to be received. From the same source we learn that the four Japanese gentlemen who were recently in Sydney have gone to Melbourne with the object of furthering an extension of trade with Australia, more especially in the direction of wool and sheep.

The publication is announced (Ch. Stahl's Verlag in Neu-Ulm) of a "Grosses illustrirtes Kräuterbuch," containing a complete description of all plants and herbs in reference to their uses, their effects and application, their culture, collection, and preservation. It contains instructions for the preparation of all kinds of medicines, juices, syrups, conserves, essences,

powders, &c. The work contains coloured illustrations, and is published in fifteen parts.

ON Saturday evening a most interesting *soirée* took place at the Continental Hotel, Paris. The former pupils of the Central School of Arts and Manufactures received the foreign engineers who had taken part in the Universal Exhibition. At supper M. Dumas was in the chair, and had on his right hand M. Teisserenc de Bort, and on his left Mr. Cunliffe Owen. The hotel was illuminated as usual on such occasions, with the Jablochkoff candles, and a display of electric machines took place. While speaking of the exhibition we may state that the society for delivering lectures to the visitors, to the foundation and progress of which we have several times referred, has been a great success. It has been most heartily patronised by M. Bardoux, the Minister of Public Instruction. The visits to the exhibition by the working men travelling with the funds of the great lottery have been taken advantage of by the lecturing organisation, to give numerous special lectures in connection with the various industries. Not less than forty-four lectures were delivered on Monday week to as many different assemblies selected for the purpose.

A SILVER medal has been awarded at the Paris Exhibition to Mr. Edward Whymper for the engravings which he contributed. This is the highest award made to any British engraver, and is we believe the only silver medal that has been given to any engraver on wood of any country.

A CORRESPONDENT, Mr. Crowther, proposes that instead of using magneto-electric currents in the Bell telephone, induced electric currents be employed. This he proposes to accomplish by using adjacent flat spirals of copper wire, through one of which a current is sent and the other joined to the line wire and attached to a similar receiver at the distant end. We believe a somewhat similar suggestion has already been tried but with no practical benefit.

IT is stated that in the Island of St. Vincent the cocoa-nut palm (*Cocos nucifera*) is now found very sparingly, though at one time the palm was one of the most profitable of all the plants grown in the island. About a quarter of a century ago the palms were visited by a severe blight, from which they have never recovered. It is calculated that about a million cocoa-nut trees are about the present time bearing fruit in the archipelago of Seychelles, and during the next five years quite half as many more will probably be producing fruit.

HIGHLY interesting remains of Roman structures have recently been discovered on the Capersburg, near Friedberg, in the Grand Duchy of Hessen. The excavations are under the direction of Herr G. Dieffenbach, and are being made at the instigation of the Hessian Historical Society of Darmstadt.

THE Leeds Philosophical and Literary Society send us an attractive programme of lectures, mostly scientific, for session 1878-9. We notice that on January 7 Prof. Thorpe is to lecture on the Solar Eclipse of 1878.

SIGNOR A. PONTI, of Milan, has intimated to the Paris Academy that he intends to place at its disposal a sum of 60,000 lire for the foundation of an annual prize, to be distributed as the Academy thinks advisable.

IN Class 15 of the Paris Exhibition, a gold medal was awarded to Messrs. Légé and Co., not Léqé, as misspelt in the "first proof" of the list referred to last week.

ON September 23-26, 1879, the third meeting of the "International Congress of Americanists" will take place at Brussels, under the protectorate of the King of the Belgians and the presidency of the Count of Flanders.

WE have received Part I. of "The Herefordshire Pomona," containing coloured figures and descriptions of the most esteemed kinds of apples and pears, edited by Robert Hogg, LL.D., F.L.S., and published under the auspices of the Woolhope Club (London: Hardwicke and Bogue). The work promises to be one of the most magnificent of its kind, and the coloured illustrations are the finest specimens of chromolithography we have seen; they are by Severeyns, of Brussels. The text, besides descriptions of the various kinds of apples and pears figured, contains a learned and interesting paper by Dr. Bull "On the Early History of the Apple and Pear," and by the same author, a "Life of Thomas Andrew Knight," the eminent horticulturist, of whom there is a fine portrait. This work is in the highest degree creditable to the Woolhope Club. From a prefixed notice we learn that "The Herefordshire Pomona" was originally intended to form a work of local character, as its title indicates, but the great and widespread interest with which the announcement of its publication has been received induces the Woolhope Club to believe that it will be more useful if its scope be made more general. It is intended, therefore, subject to the favour and support it may meet with, to make this Pomona a thoroughly English work. Its local name will still be retained, but it will embrace all apples and pears of established merit cultivated in Great Britain, even though some of the new, or special varieties, may not as yet be grown in Herefordshire. The Second Part of "The Herefordshire Pomona" will be published during the summer of 1879, and will contain, in continuation of the introductory matter, a paper "On Modern Apple Lore;" "A Sketch of the Life of Lord Scudamore," by Dr. Bull, with a full-page portrait; and a paper "On the Cordon System of Growing Pears," by Sir Henry E. C. Scudamore Stanhope, Bart., with a full-page woodcut of the Cordon Wall at Holme Lacy. These will be followed by six coloured plates of such different varieties of fruits as may be procured in perfection during the ensuing season. The Pomona Committee of the Woolhope Club will feel indebted for any assistance that may be rendered to them by supplying information with reference to any new or rare apples and pears of acknowledged merit; their origin, date of production, and description of the fruit. If it be desired to submit them to the judgment of the Committee, with a view to their publication in the work, it will be necessary to send a few well-grown typical specimens of the fruit, that such as are selected may be carefully drawn and coloured from nature, and their descriptions and merits verified. Parcels of fruit should be sent to "The Pomona Committee, Free Library, Hereford."

A NEW mineral spring has recently been discovered at Suhl, in Thuringia, which is particularly rich in chloride of calcium, according to the analysis of Professors Reichardt (Jena) and Sonnenschein (Berlin). Otherwise it resembles the Elizabeth spring of Kreuznach in its composition. The authorities of Suhl intend transforming their charmingly situated little Thuringian town into a fashionable watering-place.

THE twenty-fifth volume of the excellent German scientific series, *Die Naturkräfte*, contains an able treatise on the conservation of energy as the basis of modern physics, by Dr. G. Krebs, of Frankfort-on-the-Main. After some introductory chapters on the changes occurring in nature, on forces, the conversion of finite motions and the meaning of the words work and energy, the author gives a condensed explanation of the sound-oscillations, the conversion of kinetic into caloric energy, and the mechanical equivalent of heat. He then treats of the inner constitution and the three aggregate states of matter, the propagation of heat and light, the identity of the last-named forces, and ends with a chapter on electricity and magnetism, and one on the dispersion of energy. The little book contains numerous woodcuts.

THE additions to the Zoological Society's Gardens during the past week include two Macaque Monkeys (*Macacus cynomolgus*) from India, presented respectively by Capt. E. Waterhouse and Mr. Samuel Thomson; a Common Roe (*Capreolus caprea*) from Greece, presented by Mr. Edward Jones; a Common Jackal (*Canis aureus*) from India, presented by Capt. Easson; a Common Seal (*Phoca vitulina*), European, presented by Messrs. Thompson and Gough; a Bornean Fireback (*Euplocamus nobilis*) from Borneo, presented by Mr. A. Dent; two Mandarin Ducks (*Aix galericulata*) from China, presented by Mr. Edward Trelawny; a Common Marmoset (*Hapala jacchus*), a Tuberculated Lizard (*Iguana tuberculata*), a Teguexin Lizard (*Teius teguexin*), a Merrem's Snake (*Liophis merremi*), a Black-headed Snake (*Homalocranion melanocephalum*), a Plumbeous Snake (*Oxyrhopus plumbeus*), a d'Orbigny's Snake (*Heterdon d'orbignyi*), an Anaconda (*Eunectes murinus*) from South America, purchased; a Collared Fruit Bat (*Cynonycteris collaris*), born in the Gardens.

A NEW GALVANOMETER FOR STRONG CURRENTS

ON the following principle an ordinary tangent galvanometer can be transformed into an instrument suitable for the measurement of strong currents such as produced by powerful magneto- or dynamo-electric machines.

Suppose the circular coil of a tangent galvanometer mounted so as to turn round its horizontal diameter lying in the meridian, and assume the needle to be freely movable *in all directions*, then the effect which the current produces upon the magnet at different inclinations of the coil to the horizontal plane is as follows:—

1st. If the ring is in the vertical position (in the meridian) we have the ordinary form of tangent galvanometer, for which

$$\tan \alpha = \frac{k I}{H} \quad . \quad . \quad . \quad . \quad . \quad (1)$$

where α is the deflection of the needle in the horizontal plane, I the strength of the current, k a constant depending upon the dimensions of the coil, and H the horizontal component of the earth's magnetism.

2nd. If the ring is in the vertical position the magnet is only deflected in the plane of the meridian, and the deflection is determined by

$$\tan \beta = \frac{k I}{V} \quad . \quad . \quad . \quad . \quad . \quad (2)$$

where β is the deflection and V the vertical component of the earth's magnetism. This would be a tangent galvanometer in which the directive force of the current is opposed by the *vertical* component of the terrestrial magnetism.

By the combination of these two formulæ we obtain

$$\frac{\tan \alpha}{\tan \beta} = \frac{V}{H}.$$

Hence, the tangents of the two deflections are in inverse proportion respectively to the two components of the earth's magnetism.

Since $\frac{V}{H} = \tan i$, where i is the "magnetic dip," this relation may be used to ascertain the "dip" by a method similar to that of Prof. Wilhelm Weber by the inductive action of the earth.

3rd. If the ring is neither in the vertical nor in the horizontal position, but is inclined at any angle ϕ to the horizontal plane, the magnet is simultaneously deflected from the plane of the meridian through an angle α and from the horizontal plane through an angle β. In this case we have to introduce, instead of k in the equations 1 and 2 respectively, $k \sin \phi$ and $k \cos \phi$, whereby they become

$$\tan \alpha = \frac{k I}{H} . \sin \phi \quad . \quad . \quad . \quad . \quad . \quad (3)$$

$$\tan \beta = \frac{k I}{V} . \cos \phi \quad . \quad . \quad . \quad . \quad . \quad (4)$$

Combining these two equations we obtain the formula

$$\frac{\tan \alpha}{\tan \beta} \cot \phi = \frac{V}{H} = \tan i,$$

ϕ being known and α and β read off, the "dip" may be found by such measurements without *altering* the inclination of the coil.

If the ring is gradually brought from the vertical to the horizontal position, whilst a current I passes through it, the deflection α decreases proportionally from the maximum $\tan \alpha = \frac{k I}{H}$ to zero. At the same time the deflection β increases from zero to the maximum $\tan \beta = \frac{k I}{V}$.

For practical measurements we need only consider the deflection α in the horizontal plane, and for this reason the needle should work on a vertical axle pivoted at both ends.

With this form of instrument I was enabled to measure very strong currents.

It will be readily understood that a current which would throw the needle to nearly 90° when the ring is vertical, will, when it is suitably inclined, only deflect the needle to that part of the scale (45°) where readings are most accurate.

If the instrument and place of observation remain the same, we can substitute in equation (3) a new constant K for $\frac{k}{H}$ whereby it is simplified to

$$\tan \alpha = K I \sin \phi.$$

Further we have for other currents I_1, I_2, &c., at other angles of inclination ϕ_1, ϕ_2, &c.

$$\tan \alpha_1 = K I_1 \sin \phi_1,$$
$$\tan \alpha_2 = K I_2 \sin \phi_2, \text{ &c.,}$$

hence,

$$\tan \alpha : \tan \alpha_1 : \tan \alpha_2 \ldots = I \sin \phi : I_1 \sin \phi_1 : I_2 \sin \phi_2, \text{ &c.,}$$

$$\text{or } I : I_1 : I_2 \ldots = \frac{\tan \alpha}{\sin \phi} : \frac{\tan \alpha_1}{\sin \phi_1} : \frac{\tan \alpha_2}{\sin \phi_2} \ldots$$

By this relation different currents measured at different inclinations of the ring can be compared.

The following separate cases may serve as further illustrations:—

Case 1. Currents of different strength I_1, I_1, $I_2 \ldots$, sent through the coil at the same inclination ϕ, give—

$$\tan \alpha : \tan \alpha_1 : \tan \alpha_2 \ldots = I : I_1 : I_2 \ldots$$

Therefore the law of tangents holds also for the inclined ring.

Case 2. The same current I sent through the ring at different angles of inclination ϕ, ϕ_1, $\phi_2 \ldots$ gives

$$\tan \alpha : \tan \alpha_1 : \tan \alpha_2 \ldots = \sin \phi : \sin \phi_1 : \sin \phi_2 \ldots .$$

$$\text{or } \frac{\tan \alpha}{\sin \phi} : \frac{\tan \alpha_1}{\sin \phi_1} : \frac{\tan \alpha_2}{\sin \phi_2} = \ldots = C$$

where C a constant.

The tangents of the deflections are therefore in the same proportion as the sines of the inclinations; or in other words, the tangents of the deflections divided by the sines of the corresponding inclinations give for the same strength of current a constant value.

Case 3. For different currents I, I_1, $I_2 \ldots$ sent through the ring at inclinations ϕ, ϕ_1, $\phi_2 \ldots$ giving the *same* deflection α (say of 45°) we have

$$I : I_1 : I_2 : \ldots = \frac{1}{\sin \phi} : \frac{1}{\sin \phi_1} : \frac{1}{\sin \phi_2} \ldots$$
$$= \text{cosec } \phi : \text{cosec } \phi_1 : \text{cosec } \phi_2 \ldots$$

and the instrument thus used acts as a *cosecant* galvanometer.

The instrument which I used to ascertain the degree of accuracy of the method described consisted of a wooden ring of 30 cm. diameter, wound for some experiments with a few convolutions of wire, and for other experiments with a copper band. This ring, in the centre of which a small magnetic needle was placed, could be turned round its horizontal diameter, and its inclination read off on a graduated quadrant. To adjust the instrument the ring is approximately placed in the horizontal position; a current is then sent through the coil, and if the needle is deflected from the meridian, the inclination of the ring must be carefully altered until no deflection occurs. In this position the quadrant is fixed so that its zero point coincides with the index attached to the coil, and the instrument is now ready for use.

The following tables contain records of some of the experiments made with this instrument:—

Table I. gives the results obtained with a coil of seven convolutions of wire of ·074 Siemens' units resistance, and with a needle turning on a point. One Bunsen's cell was used, and the strength of current varied by the introduction of resistances. For each current-strength readings were taken at inclinations of the ring, the sines of which are proportional to the even integers 2 to 10.